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- Abels, A. and Bischoff, L., 1999. Clockwise block rotations in northern Chile: Indications for a large-scale domino mechanism during the middle- to late Eocene. *Geology*, 27: 751-754.
- Aldanmaz, E., Pearce, J.A., Thirlwall, M.F. and Mitchell, J.G., 2000. Petrogenetic evolution of late Cenozoic, post-collision volcanism in western Anatolia, Turkey. *Journal of Volcanology and Geothermal Research*, 102: 67-95.
- Arth, J.G., Barker, F., Peterman, Z.E. and Friedman, I., 1978. Geochemistry of the gabbro-diorite-tonalite trondhjemite suite of southwest Finland and its implications for the origin of tonalitic and trondhjemitic magmas. *Journal of Petrology*, 19: 289-316.
- Atherton, M.P., Sanderson, L.M., Warden, V. and McCourt, W.J., 1985. The volcanic cover: chemical composition and the origin of the magmas of the Calipuy Group. In: W.S. Pitcher, M.P. Atherton, E.J. Cobbing and R.A. Beckingsale (Editors), *Magmatism at a Plate Edge: The Peruvian Andes*. Blackie, Glasgow and London, pp. 973-984.
- Ballantyne, G.H., Smith, T.W. and Redmond, P.B., 1997. Distribution and mineralogy of gold and silver in the Bingham Canyon porphyry copper deposit, Utah. *Society of Economic Geologists Guidebook* 29: 147-153.
- Barazangi, M. and Isacks, B.L., 1979. Subduction of the Nazca plate beneath Peru: evidence from spatial distribution of earthquakes. *Geophysical Journal of the Royal Astronomical Society*, 57: 537-555.
- Barreiro, B.A., 1984. Lead isotopes and Andean magmagenesis. In: R.S. Harmon and B.A. Barreiro (Editors), *Andean Magmatism, Chemical and Isotopic Constraints*. Shiva, Cheshire, pp. 21-30.

Beckinsale, R.D., Sanchez-Fernandez, A.W., Brook, M., Cobbing, E.J., Taylor, W.P. and Moore, N.D., 1985. Rb-Sr whole-rock isochron and K-Ar age determinations for the Coastal Batholith of Peru. In: W.S. Pitcher, M.P. Atherton, E.J. Cobbing and R.A. Beckinsale (Editors), *Magmatism at a Plate Edge: The Peruvian Andes*. Blackie, Glasgow and London, pp. 177-202.

Behn, G., Camus, F., Carrasco, P. and Ware, H., 2001. Aeromagnetic signature of porphyry copper systems in northern Chile and its geological implications. *Economic Geology*, 96: 239-248.

Bellier, O., Sebrier, M., Fourtanier, E., Gasse, F. and Robles, I., 1989. Late Cenozoic evolution of the E-W striking Cajamarca deflection in the Namora basin (Andes of Northern Peru). *Annales Tectonicae*, 3: 77-98.

Benavides, C.V., 1999. Orogenic evolution of the Peruvian Andes: the Andean cycle. In: B.J. Skinner (Editor), *Geology and ore deposits of the Central Andes*. Society of Economic Geologists, Special publication No. 7: 61-107.

Benavides, V., 1956. Cretaceous system in northern Peru. *American Museum of Natural History Bulletin*, 108: 355-493.

Borredon, R., 1982. Etude géologique et métallénique du district minier de Hualgayoc (Perou Septentrional) à plomb-zinc-cuivre-argent. Unpub. Ph.D. Thesis, University of Paris VI.

Burnham, W.C., 1979. Magmas and hydrothermal fluids. In: H.L. Barnes (Editor), *Geochemistry of hydrothermal ore deposits* (Second Edition). Wiley-Interscience, New York, pp. 71-137.

Burnham, W.C., 1981. Convergence and mineralisation - Is there a relation? *Geological Society of America Memoir* 154: 761-768.

- Caffe, P.J., Trumbull, R.B., Coira, B.I. and Romer, R.L., 2002. Petrogenesis of Early Neogene magmatism in the northern Puna; implications for magma genesis and crustal processes in the Central Andean Plateau. *Journal of Petrology*, 43: 907-942.
- Campos, E., Touret, J.L.R., Nikogosian, I. and Delgado, J., 2002. Overheated, Cu-bearing magmas in the Zaldivar porphyry-Cu deposit, Northern Chile. Geodynamic consequences. *Tectonophysics*, 345: 229-251.
- Candela, P.A., 1997. A review of shallow, ore-related granites: Textures, volatiles, and ore metals. *Journal of Petrology*, 38: 1619-1633.
- Candela, P.A. and Piccoli, P.M., 1995. Model ore-metal partitioning from melt into vapour and vapour/brine mixtures. *Mineralogical Association of Canadian Short Course*, 23: 101-127.
- Chernicoff, C.J., Richards, J.P. and Zappettini, E.O., 2002. Crustal lineament control on magmatism and mineralisation in northwestern Argentina: geological, geophysical, and remote sensing evidence. *Ore Geology Reviews*, 21: 127-155.
- Clark, A.H., 1993. Are outsized porphyry copper deposits either anatomically or environmentally distinctive? In: B.H. Whiting, C.J. Hodgson and R. Mason (Editors), *Giant Ore Deposits*. Society of Economic Geologists, Special Publication 2, pp. 213-283.
- Clark, A.H. and Arancibia, O.N., 1995. The occurrence, paragenesis and implications of magnetite-rich alteration-mineralisation in calc-alkaline porphyry copper deposits. In: A.H. Clark (Editor), *Giant ore deposits II: Controls on the scale of orogenic magmatic-hydrothermal mineralisation*. Queen's University, Kingston, ON, pp. 583-640.
- Cobbing, E.J., Pitcher, W.S., Wilson, J.J., Baldock, J.W., Taylor, W.P., McCourt, W. and Snelling, N.J., 1981. The geology of the Western Cordillera of northern Peru. Institute of Geological Sciences, Overseas Memoir 5.

Cordova, J.R. and Hoyos, D.J., 2000. Geologia del porfido de Cu-(Au-Mo) el Galeno, Cajamarca, Peru. X Congresso Peruano de Geologia Resumenes, Sociedad Geologica del Peru, Lima, 2000: 246.

Dalrymple, G.B. and Lanphere, M.A., 1974. $^{40}\text{Ar}/^{39}\text{Ar}$ age spectra of some undisturbed terrestrial samples. *Geochemica et Cosmochimica Acta*, 38: 715-738.

Davidson, J.P., Harmon, R.S. and Worner, G., 1991. The source of central Andean magmas; some considerations. In: R.S. Harmon and C.W. Rapela (Editors), *Andean magmatism and its tectonic setting*. Boulder, Colorado, Geological Society of America Special Paper 265, pp. 233-243.

Davies, C., 2000. Structural controls and magmatic evolution of the Cajamarca region, northern Peru. Unpubl. Internal Report for North Ltd., May 2000.

Fournier, R.O., 1999. Hydrothermal processes related to movement of fluid from plastic into brittle rock in the magmatic-epithermal environment. *Economic Geology*, 94: 1193-1212.

Frey, F.A., Chappell, B.W. and Roy, S.D., 1978. Fractionation of rare earth elements in the Tuolumne Intrusive Series, Sierra Nevada batholith, California. *Geology*, 6: 239-242.

Fukao, Y., Yamamoto, A. and Kono, M., 1989. Gravity anomaly across the Peruvian Andes. *Journal of Geophysical Research*, 94: 3867-3890.

Gammons, C.H. and Williams-Jones, A.E., 1997. Chemical mobility of gold in the porphyry-epithermal environment. *Economic Geology*, 92: 45-59.

Garcia, J.B., 1999. Estudio petrografico, mineralogico y de alteraciones en los sondeos DDH-GN-35 a DDH-GN-44, proyecto El Galeno, Cajamarca. Unpubl. Internal Report for North Ltd., 1999.

Gill, J.B., 1981. *Orogenic Andesites and Plate Tectonics*. Springer-Verlag, Berlin.

Glazner, A., 1991. Plutonism, oblique subduction, and continental growth: an example from the Mesozoic of California. *Geology*, 19: 784-786.

Gow, P. and Ord, A., 1999. Numerical modelling of deformation and fluid-flow in shallow plutonic compressional environments. Halls Gap, Victoria; Specialist Group in Tectonic and Structural Geology Conference: 86-87.

Green, T.H. and Pearson, N.J., 1985. Experimental determination of REE partition coefficients between amphibole and basaltic liquids at high pressure. *Geochemica et Cosmochimica Acta*, 49: 1465-1468.

Gustafson, L.B. and Hunt, J.P., 1975. The porphyry copper deposit of El Salvador, Chile. *Economic Geology*, 70: 857-912.

Gutscher, M.A., Olivet, J.L., Aslanian, D., Eissen, J.P. and Maury, R., 1999. The "lost Inca Plateau"; cause of flat subduction beneath Peru? The "lost Inca Plateau"; cause of flat subduction beneath Peru? *Earth and Planetary Science Letters*, 171: 335-341.

Hammond, R., 1998. El Galeno project, northern Peru: Observations and their implications. Unpubl. Internal Report for North Ltd, August 1998.

Harvey, B.A., Myers, S.A. and Klein, T., 1999. Yanacocha gold district, northern Peru. *Pacrim '99*, Bali, Indonesia, 10-13 October 1999: 445-459.

Hawkesworth, C.J., Gallagher, K., Hergt, J.M. and McDermott, F., 1993. Mantle and slab contributions in arc magmas. *Annual Review of Earth Planetary Science*, 21: 175-204.

Hawkesworth, C.J. Norry, M.J., Roddick, J.C., Baker, P.E., Francis, P.W. and Thorpe, R.S., 1979. $^{143}\text{Nd}/^{144}\text{Nd}$, $^{87}\text{Sr}/^{86}\text{Sr}$, and incompatible element variations in calc-alkaline andesites and plateau lavas from South America. *Earth and Planetary Science Letters*, 42: 45-57.

Hedenquist, J.W., Arribas, A.J. and Reynolds, J.T., 1998. Evolution of an intrusion-centred hydrothermal system: Far Southeast-Lepanto porphyry and epithermal Cu-Au deposits, Philippines. *Economic Geology*, 93: 373-404.

Heidrick, T.L. and Titley, S.R., 1982. Fracture and dyke patterns in Laramide plutons and their structural and tectonic implications: American southwest. In: S.R. Titley (Editor), *Advances in Geology of the Porphyry Copper Deposits*. University of Arizona, Tuscon, pp. 73-91.

Hildreth, W. and Moorbath, S., 1988. Crustal contributions to arc magmatism in the Andes of Central Chile. *Contributions to Mineralogy and Petrology*, 98: 455-489.

Hollister, V.F. and Sirvas, E.B., 1974. The Michiquillay porphyry copper deposit. *Mineralium Deposita*, 9: 261-269.

Irvine, T.N. and Baragar, W.R.A., 1971. A guide to chemical classification of the common volcanic rocks. *Canadian Journal of Earth Science*, 8: 523-548.

Jaillard, E. and Soler, P., 1996. Cretaceous to early Paleogene tectonic evolution of the northern Central Andes (0-18°S) and its relations to geodynamics. *Tectonophysics*, 259: 41-53.

James, D.E., 1981. Role of subducted continental material in the genesis of calc-alkaline volcanics of the central Andes. *Geological Society of America, Memoir* 154: 769-790.

James, D.E. and Sacks, I.S., 1999. Cenozoic formation of the Central Andes: A geophysical perspective. In: B.J. Skinner (Editor), *Geology and Ore Deposits of the Central Andes*. Society of Economic Geologists, Special Publication No. 7: 1-25.

James, J., 1998. Geology, alteration, and mineralisation of the Cerro Corona porphyry copper-gold deposit, Cajamarca Province, Peru. Unpubl. MSc Thesis, University of British Columbia, Vancouver, Canada.

Jordon, T.E., Isacks, B.L., Allmendinger, R.W., Brewer, J.A., Ramos, V.A. and Ando, C.J., 1983. Andean tectonics related to geometry of subducted Nazca plate. Geological Society of America Bulletin, 94: 341-361.

Kay, S.M. and Mpodozis, C., 2001. Central Andean ore deposits linked to evolving shallow subduction systems and thickening crust. GSA Today, 11: 4-9.

Kay, S.M., Mpodozis, C. and Coira, B.I., 1999. Magmatism, tectonism, and mineral deposits of the Central Andes (22°S-33°S). In: B.J. Skinner (Editor), Geology and Ore Deposits of the Central Andes. Society of Economic Geologists, Special Publication No. 7: 27-59

Kay, S.M., Mpodozis, C., Ramos, V.A. and Munizaga, F., 1991. Magma source variations for mid-late Tertiary magmatic rocks associated with a shallowing subduction zone and a thickening crust in the central Andes (28 to 33°S). In: R.S. Harmon and C.W. Rapela (Editors), Andean magmatism and its tectonic setting. Boulder, Colorado, Geological Society of America Special Paper 265, pp. 113-137.

Kerrich, R. and Wyman, D.A., 1997. Review of developments in trace-element fingerprinting of geodynamic settings and their implications for mineral exploration. Australian Journal of Earth Science, 44: 465-487.

Kesler, S.E., Chryssoulis, S.L. and Simon, G., 2002. Gold in porphyry copper deposits: its abundance and fate. Ore Geology Reviews, 21: 103-124.

Kissel, C., Laj, C., Surmont, J., Macedo-Sanchez, O. and Mitouard, P., 1992. South American active margin; Andean deflections and crustal thickening. Bulletin de la Societe Geologique de France, 163: 371-380.

Kono, M., Fukao, Y. and Yamamoto, A., 1989. Mountain building in the Central Andes. Journal of Geophysical Research, 94: 3891-3905.

Laj, C., Mitourad, P., Roperch, P., Kissel, C., Mourier, T. and Farfan Medrano, A., 1989. Paleomagnetic rotations in the coastal areas of Ecuador and northern Peru. In: C.

Kissel and C. Laj (Editors), Paleomagnetic Rotations and Continental Deformation. Kluwer, Amsterdam.

Lang, J.R. and Titley, S.R., 1998. Isotopic and geochemical characteristics of Laramide magmatic systems in Arizona and implications for the genesis of porphyry copper deposits. *Economic Geology*, 93: 138-170.

Laughlin, A.W., Damon, P.E. and Watson, B.N., 1968. Potassium-Argon dates from Toquepala and Michiquillay, Peru. *Economic Geology*, 63: 166-168.

Le Bel, L.M., 1985. Mineralisation in the Arequipa segment: The porphyry-Co deposit of Cerro Verde/Santa Rosa. In: W.S. Pitcher, M.P. Atherton, E.J. Cobbing and R.A. Beckingsale (Editors), *Magmatism at a Plate Edge: The Peruvian Andes*. Blackie, Glasgow and London, pp. 250-260.

Le Maitre, R.W., Bateman, P., Dudek, A., Keller, J., Lameyre Le Bas, M.J., Sabine, P.A., Schmid, R., Sorensen, H., Streckeisen, A., Woolley, A.R. and Zanettin, B., 1989. A classification of igneous rocks and glossary of terms. Blackwell, Oxford.

Lindsay, D.D., Zentilli, M. and Rojas de la Rivera, J., 1995. Evolution of an active ductile to brittle shear system controlling mineralisation at the Chuquicamata porphyry copper deposit, northern Chile. *International Geology Review*, 37: 945-958.

Llosa, F., Lescuyer, J.L. and Milesi, J.P., 1996. Minas Conga: descubrimiento, exploracion y marco geologico de los porfidos Au-Cu en la region de Cajamarca. Segundo Simposio Internacional del Oro, Comite Aurifero, Sociedad Nacional de Mineria y Petroleo, Lima: 275-283.

Llosa, F. and Veliz, J., 2000. Geologia, alteracion y mineralizacion de los porfidos de Au-Cu de Minas Conga, norte del Peru (Cajamarca). X Congresso Peruano de Geologia Resumenes, Sociedad Geologica del Peru, Lima, 2000: 248.

Longo, A.A., 2000. The San Jose-Charachugo-Chaquicocha gold trend, Yanacocha district, northern Peru. In: J.K. Cluer, J.G. Price, E.M. Struhsacker, R.F. Hardyman and

C.L. Morris (Editors), Geology and Ore Deposits 2000: The Great Basin and Beyond. Geological Society of Nevada Symposium Proceedings, May 15-18, 2000: 1-20.

Lopez, L., 1982. Caracteristicas geoquimicas de rocas igneas asociadas con porfidos cupriferos chilenos. Revista Geologica de Chile, 17: pp. 3-19.

Macfarlane, A.W., 1999. Isotopic studies of northern Andean crustal evolution and ore metal sources. In: B.J. Skinner (Editor), Geology and Ore Deposits of the Central Andes. Society of Economic Geologists, Special Publication No. 7: 195-216.

Macfarlane, A.W., Marcket, P., LeHuray, A.P. and Petersen, U., 1990. Lead isotope provinces of the central Andes inferred from ores and crustal rocks. Economic Geology, 85: 1857-1880.

Macfarlane, A.W. and Petersen, U., 1990. Pb isotopes of the Hualgayoc area, northern Peru: Implications for metal provenance and genesis of a cordilleran polymetallic mining district. Economic Geology, 85: 1303-1327.

Macfarlane, A.W., Prol-Ledesma, R.-M. and Conrad, M.E., 1994. Isotope and fluid inclusion studies of geological and hydrothermal processes, northern Peru. International Geology Review, 36: 645-677.

Marsh, T.M., Einaudi, M.T. and McWilliams, M., 1997. $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology of Cu-Au and Au-Ag mineralisation in the Poterillos district, Chile. Economic Geology, 92: 784-806.

Martin, H., 1987. Petrogenesis of Archean trondhjemites, tonalites, and granodiorites from eastern Finland; Major and trace element geochemistry. Journal of Petrology, 28: 921-953.

McInnes, P., 1997. A geological appraisal of the Michiquillay porphyry copper deposit and regional potential. Unpubl. Internal Report for North Ltd, October 1997.

- McNulty, B.A., Farber, D.L., Wallace, G.S., Lopez, R. and Palacios, O., 1998. Role of plate kinematics and plate-slip-vector partitioning in continental magmatic arcs: Evidence from the Cordillera Blanca, Peru. *Geology*, 26: 827-830.
- Mégard, F., 1984. The Andean orogenic period and its major structures in central and northern Peru. *Journal of the Geological Society of London*, 141: 892-900.
- Mégard, F., 1987. Structure and evolution of the Peruvian Andes. In: Schaer and Rogers (Editors), *Anatomy of Mountain Ranges*. Princeton University Press, Princeton, New Jersey, pp. 179-210.
- Meinert, L.D., Hefton, K.K., Mayes, D. and Tasiran, I., 1997. Geology, zonation, and fluid evolution of the Big Gossan Cu-Au skarn deposit, Erstberg district, Irian Jaya. *Economic Geology*, 92: 509-534.
- Merzbacher, C. and Eggler, D.H., 1984. A magmatic geohygrometer: Application to Mount St. Helens and other dacitic magmas. *Geology*, 12: 587-590.
- Metal Mining Agency, 1975. Report on geological survey of the Michiquillay area, Republic of Peru. Unpubl. Internal Report for Metal Mining Agency, Japan International Cooperation Agency and Government of Japan, November 1975.
- Metal Mining Agency, 1975. Report on geological survey of the Michiquillay area, Republic of Peru. Unpubl. Internal Report for Metal Mining Agency, Japan International Cooperation Agency and Government of Japan, November 1975.
- Mitouard, P., Kissel, C. and Laj, C., 1990. Post-Oligocene rotations in southern Ecuador and northern Peru and the formation of the Huancabamba deflection in the Andean Cordillera. *Earth and Planetary Science Letters*, 98: 329-339.
- Mitouard, P., Laj, C., Mourier, T. and Kissel, C., 1992. Paleomagnetic study of an arcuate fold belt developed on a marginal orogen; the Cajamarca deflection, northern Peru. *Earth and Planetary Science Letters*, 112: 41-52.

Nakamura, K., 1977. Volcanoes as possible indicators of tectonic stress orientation - Principal and proposal. *Journal of Volcanology and Geothermal Research*, 2: 1-16.

Nakamura, Y. and Kushiro, I., 1974. Composition of the gas phase in $Mg_2SiO_4-SiO_2-H_2O$ at 15 kbar, Geophysical Laboratory; Igneous petrology, experimental and field studies; Volatiles in ultrabasic and derivative rock systems. Carnegie Institution of Washington, pp. 255-259.

Naney, M.T., 1983. Phase equilibria of rock-forming ferromagnesian silicates in granitic systems. *American Journal of Science*, 283: 993-1033.

Nash, W.P. and Creecraft, H.R., 1985. Partition coefficients for trace elements in silicic magmas. *Geochemica et Cosmochimica Acta*, 49: 2309-2322.

Newmont, 2002. Newmont Mining Corporation web page: <http://www.newmont.com/>

Noble, D.C. and McKee, E.H., 1999. The Miocene metallogenic belt of Central and Northern Peru. In: B.J. Skinner (Editor), *Geology and Ore Deposits of the Central Andes*, Society of Economic Geologists, Special Publication No. 7: 155-193.

Noble, D.C., McKee, E.H. and Mégard, F., 1979. Early Tertiary "Incaic" tectonism, uplift, and volcanic activity, Andes of central Peru. *Geological Society of America Bulletin*, 90: 903-907.

Noble, D.C., McKee, E.H., Mourier, T. and Mégard, F., 1990. Cenozoic stratigraphy, magmatic activity, compressive deformation, and uplift in northern Peru. *Geological Society of American Bulletin*, 102: 1105-1113.

Noble, D.C., Sébrier, M., Mégard, F. and McKee, E.H., 1985. Demonstration of two pulses of Palaeogene deformation in the Andes of Peru. *Earth and Planetary Science Letters*, 73: 345-349.

Orton, J., 1874. The silver mines of Peru. *Engineering Mining Journal*, 17: 83.

- Oyarzun, R., Márquez, A., Lillo, J., López, I. and Rivera, S., 2001. Giant versus small porphyry copper deposits of Cenozoic age in northern Chile: adakitic versus normal calc-alkaline magmatism. *Mineralium Deposita*, 36: 794-798.
- Pardo-Casas, F. and Molnar, P., 1987. Relative motion of the Nazca (Farallon) and South American plates since Late Cretaceous time. *Tectonics*, 6: 233-248.
- Peacock, S.M., 1993. Large-scale hydration of the lithosphere above the subducting slabs. *Chemical Geology*, 108: 49-59.
- Peacock, S.M., Rushmer, T. and Thompson, A.B., 1994. Partial melting of subducting oceanic crust. *Earth and Planetary Science Letters*, 121: 227-244.
- Pearce, J.A., 1983. Role of the sub-continental lithosphere in magma genesis at active continental margins. In: C.J. Hawkesworth and M.J. Norry (Editors), *Continental basalts and mantle xenoliths*. Shiva, Nantwich, pp. 230-249.
- Pearce, J.A. and Norry, M.J., 1979. Petrogenetic implications of Ti, Zr, Y, and Nb variations in volcanic rocks. *Contributions to Mineralogy and Petrology*, 69: 33-47.
- Petersen, U., 1999. Magmatic and metallogenic evolution of the Central Andes. In: B.J. Skinner (Editor), *Geology and Ore Deposits of the Central Andes*, Society of Economic Geologists, Special Publication No. 7: 109-153.
- Petersen, U., Macfarlane, A.W. and Danielsen, A., 1993. Lead isotopic provinces in Peru, Bolivia and northern Chile. Second International Symposium on Andean Geodynamics: 477-480.
- Petersen, U. and Vidal, C.E., 1996. Magmatic and tectonic controls on the nature and distribution of copper deposits in Peru. In: F. Camus, R.H. Sillitoe and R. Petersen (Editors), *Andean Copper Deposits: New Discoveries, Mineralisation, Styles and Metallogeny*. Society of Economic Geologists Special Publication No 5: 1-18.

Petford, N. and Atherton, M.P., 1992. Granitoid emplacement and deformation along a major crustal lineament: the Cordillera Blanca, Peru. *Tectonophysics*, 205: 171-185.

Petford, N. and Atherton, M.P., 1996. Na-rich partial melts from newly underplated basaltic crust: the Cordillera Blanca batholith, Peru. *Journal of Petrology*, 37: 1491-1521.

Petford, N., Atherton, M.P. and Halliday, A.N., 1996. Rapid magma production rates, underplating and remelting in the Andes: isotopic evidence from northern-central Peru (9-11°S). *Journal of South American Earth Science*, 9: 69-78.

Petford, N., Lister, J.R. and Kerr, R.C., 1994. The ascent of felsic magmas in dykes. *Lithos*, 32: 161-168.

Pichavant, M., Kontak, D.J., Brihuega, L., Valencia Herrera, J. and Clark, A.H., 1988. The Miocene-Pliocene Macusani volcanics, SE Peru: II. Geochemistry and origin of a felsic peraluminous magma. *Contributions to Mineral Petrology*, 100: 325-388.

Pilger, R.H.J., 1984. Cenozoic plate kinematics, subduction and magmatism: South American Andes. *Journal of the Geological Society of London*, 141: 793-802.

Pitcher, W.S., 1997. The nature, ascent and emplacement of granitic magmas (2nd Edition). London, Chapman and Hall.

Pollard, P.J. and Taylor, R.G., 2002. Paragenesis of the Grasberg Cu-Au deposit, Irian Jaya, Indonesia: results from logging section 13. *Mineralium Deposita*, 37: 117-136.

Quiroz, A., 1997. El corredor estructural Chicama-Yanacocha y su importancia en la metalogenia del norte del Peru. IX Congreso Peruano de Geologia, Resumenes Extendidos. Sociedad Geologica del Peru, Vol. Esp. 1: 149-159.

Reyes, L.R., 1980. Mapa geologica del cuadrangulo de Cajamarca, Sheet 15f. Sector Energia y Minas, Instituto Geologico Minera y Metalurgico, Republica del Peru.

Richards, J.P. and Villeneuve, M., 2002. Characteristics of late Cenozoic volcanism along the Archibarca lineament from Cerro Llullaillaco to Corrida de Cori, northwest Argentina. *Journal of Volcanology and Geothermal Research*, 116: 161-200.

Richards, J.P., Boyce, A.J. and Pringle, M.S., 2001. Geological evolution of the Escondida area, northern Chile: A model for spatial and temporal localisation of porphyry Cu mineralisation. *Economic Geology*, 96: 271-305.

Rubin, J.N. and Kyle, J.R., 1997. Precious metal mineralogy in porphyry-, skarn-, and replacement-type ore deposits of the Erstberg (Gunung Bijih) Districtm Irian Jaya, Indonesia. *Economic Geology*, 92: 535-550.

Rutherford, M.J. and Devine, J.D., 1988. The May 18, 1980, eruption of Mount St. Helens: 3. Stability and chemistry of amphibole in the magma chamber. *Journal of Geophysical research*, 93: 11949-11959.

Sasso, A. and Clark, A.H., 1998. The Farallon Negro group, northwest Argentina: Magmatic, hydrothermal, and tectonic evolution and implications for Cu-Au metallogeny in the Andean backarc. *Society of Economic Geologists Newsletter*, 34: 1-18.

Sebrier, M. and Soler, P., 1991. Tectonics and magmatism in the Peruvian Andes from late Oligocene time to the Present. *Geological Society of America, Special Paper* 265: 259-278.

Shatwell, D., 2002. Miocene gold and copper mineralisation and the lost Inca Plateau in Peru. *AIG News*: 14-17.

Shaw, D.M., 1970. Trace element fractionation during anatexis. *Geochemica et Cosmochimica Acta*, 34: 237-243.

Sibson, R.H., 1985. A note on fault reactivation. *Journal of Structural Geology*, 7: 751-754.

- Sibson, R.H., 2001. Seismogenic framework for hydrothermal transport and ore deposition. *Society of Economic Geologists Reviews*, 14: 25-50.
- Sillitoe, R.H., 1972. Relation of metal provinces in western Americas to subduction of oceanic lithosphere. *Geological Society of American Bulletin*, 83: 813-818.
- Sillitoe, R.H., 1988. Epochs of intrusion-related copper mineralisation in the Andes. *Journal of South American Earth Science*, 1: 89-107.
- Sillitoe, R.H., 1991. Gold metallogeny of Chile - an introduction. *Economic Geology*, 86: 1155-1173.
- Sillitoe, R.H., 2000a. Geological models and exploration potential of El Galeno and Carpa porphyry copper prospects, northern Peru. Unpubl. Internal Report for North Ltd., July 2000.
- Sillitoe, R.H., 2000b. Gold-rich deposits: Descriptive and genetic models and their role in exploration and discovery. *Society of Economic Geologists Reviews*, 13: 315-345.
- Simon, G., Kesler, S.E., Essene, E.J. and Chryssoulis, S.L., 2000. Gold in porphyry copper deposits: Experimental determination of the distribution of gold in the Cu-Fe-S system at 400° to 700°C. *Economic Geology*, 95: 259-270.
- Skewes, A.M. and Stern, C.R., 1994. Tectonic trigger for the formation of late Miocene Cu-rich breccia pipes in the Andes of central Chile. *Geology*, 22: 551-553.
- Skewes, A.M. and Stern, C.R., 1996. Late Miocene mineralised breccias in the Andes of Central Chile: Sr- and Nd-isotopic evidence for multiple magmatic sources. In: F. Camus, R.H. Sillitoe and R. Petersen (Editors), *Andean Copper Deposits: New Discoveries, Mineralisation, Styles and Metallogeny*. *Society of Economic Geologists Special Publication No 5*: 33-42.
- Soler, P. and Bonhomme, M.G., 1990. Relation of magmatic activity to plate dynamics in central Peru from Late Cretaceous to present. In: S.M. Kay and C.W. Rapela

(Editors), Plutonism from Antarctica to Alaska. Special Paper - Geological Society of America, 173-190.

Stakey, J. S. and Kramers, J. D., 1975. Approximation of terrestrial lead isotope evolution by a two-stage model: Earth and Planetary Science Letters, 26: 207-221.

Stern, C.R. and Wyllie, P.J., 1978. Phase compositions through crystallisation intervals in basalt-andesite-H₂O at 30 kb with implications for subduction zone magmas. American Mineralogist, 63: 641-663.

Sun, S.S. and McDonough, W.F., 1989. Chemical and isotopic systematics of oceanic basalts: Implications for mantle composition and processes. Geological Society London Special Publication 42, 313-345.

Takada, A., 1994. The influence of regional stress and magmatic input on styles of monogenetic and polygenetic volcanism. Journal of Geophysical Research, 99: 13,563-13,573.

Taylor, S.R. and McLennan, S.M., 1985. The continental crust: Its composition and evolution. Oxford, Blackwell Scientific Publications Ltd.

Thirlwall, M.F., 2000. Interlaboratory and other errors in Pb-isotope analyses investigated using a ²⁰⁷Pb-²⁰⁴Pb double spike. Chemical Geology, 163: 299-322.

Thirlwall, M.F., Smith, T.E., Graham, A.M., Theodorou, N., Hollings, P., Davidson, J.P. and Arculus, R.J., 1994. High field strength anomalies in arc lavas: source or process? Journal of Petrology, 35: 819-838.

Titley, S.R. and Heidrick, T.L., 1978. Intrusion and fracture styles of some mineralised porphyry systems of the southwestern Pacific and their relationship to plate interactions. Economic Geology, 73: 891-903.

Titley, S.R. Thompson, R.C., Haynes, F.M., Manske, S.L., Robison, L.C. and White, J.L., 1986. Evolution of fractures and alteration in the Sierrita-Esperanza Hydrothermal System, Pima County, Arizona. *Economic Geology*, 81: 343-370.

Tosdal, R.M., 1995. Metal differences in Cenozoic porphyry Cu-Au-Mo deposits in the central Chilean Andes between 26° and 28°: An influence on the size of porphyry deposits? In: A.H. Clark (Editor), *Giant Ore Deposits II: Controls on the scale of orogenic magmatic-hydrothermal mineralisation*. Proceedings of the Second Giant Ore Deposits Workshop: Queens University, Ontario: 124-138.

Tosdal, R.M. and Richards, J.P., 2001. Magmatic and structural controls on the development of porphyry Cu ± Mo ± Au deposits. In: J.P. Richards and R.M. Tosdal (Editors), *Structural controls on ore genesis*. Society of Economic Geologists Reviews, 14: 157-181.

Tosdal, R. M., Wooden, J. L., and Bouse, R. M., 1999. Pb isotopes, ore deposits, and metallogenic terranes. In Lambert, D. D., and Ruiz, J. (Editors), *Application of Radiogenic Isotopes to Ore Deposit Research and Exploration*, *Reviews in Economic Geology*, 12: 1-28.

Turner, S.J., 1997. The Yanacocha epithermal gold deposits, northern Peru: high-sulphidation mineralisation in a flow dome setting. Unpubl. Ph.D. Thesis, Colorado School of Mines, Colorado, USA.

Turner, S.J., 1999. Settings and styles of high-sulphidation gold deposits in the Cajamarca region, northern Peru. *Pacrim '99*, Bali, Indonesia, 10-13 October 1999: 461-468.

Ulrich, T. and Heinrich, C.A., 2001. Geology and alteration geochemistry of the porphyry Cu-Au deposit at Bajo de la Alumbra, Argentina. *Economic Geology*, 96: 1719-1742.

Vidal, C.E. and Noble, D.C., 1994. Yacimientos hidrotermales controlados por magmatismo y estructuras en la region central del Peru. *Resumenes Extendidos*, VIII

Congreso Peruano de Geologica, Sociedad Geologica del Peru, Publicacion Especial no.1: 48-52.

Vila, T. and Sillitoe, R.H., 1991. Gold-rich porphyry systems in the Maricunga Belt, northern Chile. *Economic Geology*, 86: 1238-1260.

von Humboldt, A., 1827. *Ensayo politico sobre la Nueva Espana*, 2nd Edition.

Weber, M.B.I., Tarney, J., Kempton, P.P.D. and Kent, R.W., 2002. Crustal make-up of the northern Andes: evidence based on deep crustal xenolith suites, Mercaderes, SW Columbia. *Tectonophysics*, 345: 49-82.

Wilson, J.J., 1985a. Mapa geologica del cuadrangulo de Celendin, Sheet 14g. Sector Energia y Minas, Instituto Geologico Minera y Metalurgico, Republica del Peru.

Wilson, J.J., 1985b. Mapa geologica del cuadrangulo de Chota, Sheet 14f. Sector Energia y Minas, Instituto Geologico Minera y Metalurgico, Republica del Peru.

Wilson, J.J., 2000. Structural development of the northern Andes of Peru. X Congresso Peruano de Geologia Resumenes, Sociedad Geologica del Peru, Lima, 2000.

Wilson, M., 1989. Igneous Petrogenetic: a Global Tectonic Approach. Chapman & Hall, London.

Wood, B.J. and Fraser, D.G., 1976. Elementary thermodynamics for geologists. Oxford, Oxford University Press: 218.

Zentilli, M. and Maksaev, V., 1995. Metallogenetic model for the Late Eocene-Early Oligocene supergiant porphyry event, northern Chile. In: A.H. Clark (Editor), *Giant Ore Deposits II: Controls on the scale of orogenic magmatic-hydrothermal mineralisation*. Proceedings of the Second Giant Ore Deposits Workshop: Queens University, Ontario: 152-165.

Zhitian, W. and Kezhang, Q., 1989. REE geochemistry character of porphyry copper molybdenite multimetal metallogenic series and its application to distinguishing ore-bearing quality of porphyries in Manzhouli-Xinbaerhuyouqi area of Inner Mongolia, International Geological Congress, 28th, Washington, D.C., Progress in Geoscience of China (1985-1988) – Papers: 125-128.